

Title (en)

Apparatus and methods for analysing transitions in finite state machines.

Title (de)

Verfahren und Vorrichtung zur Transitionsanalyse in einem endlichen Automaten.

Title (fr)

Procédé et dispositif pour l'analyse des transitions dans un automate à nombre fini d'états.

Publication

EP 0225735 A1 19870616 (EN)

Application

EP 86308776 A 19861111

Priority

GB 8527913 A 19851112

Abstract (en)

In speech recognition words to be recognised may be represented by finite state machines and recognition is based on analysing transitions through the machines as an utterance occurs. One value which is then required for each state of each machine in a timescale which is compatible with continuous speech recognition is minimum cumulative distance; that is the smallest of values dependent on reaching one of the states from a starting position, considering all possible paths. In the present invention a specially constructed Viterbi engine is provided for calculating cumulative distances at high speed. Latch circuits 50, 51, 52 holding pointers allow a RAM 41 to be read to provide, for a current machine state, both stored cumulative distances of states with transitions to that state and stored penalties corresponding to the transitions. A logic circuit comprising latch circuits 60 and 65 and an ALU 61 finds the cumulative distance for each path as far as the current state, selects the minimum using a latch circuit 56 and adds another penalty dependent on the current state. Thus a minimum cumulative distance is provided for storage and for a speech recognition decision making circuit. The process is repeatedly carried out for each state of each machine under the control of a controller 45. The total number of iterations of the engine in reaching each minimum cumulative distance is also held in the RAM 41 and updated by the logic circuit.

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G10L 5/06

IPC 8 full level

G06K 9/62 (2006.01); **G10L 15/14** (2006.01)

CPC (source: EP US)

G06F 18/295 (2023.01 - EP US); **G10L 15/14** (2013.01 - EP US)

Citation (search report)

[A] US 4156868 A 19790529 - LEVINSON STEPHEN E [US]

Cited by

EP0422560A1; DE10006937C2; US10346777B2; US10346778B2; US11295258B2; US11301792B2

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